

**Lower Willamette Group**

**Co-Chairperson: Bob Wyatt, NW Natural**  
**Co-Chairperson: Jim McKenna, Port of Portland**  
**Treasurer: Larry Patterson, ATOFINA**

July 9, 2003

Mr. Travis Williams  
Willamette Riverkeeper  
380 SE Spokane Street, Suite 305  
Portland, OR 97202-6464

RE: Willamette Riverkeeper Comments on the March 31, 2003 Programmatic Workplan for the Portland Harbor RI/FS

Dear Travis:

We have received Willamette Riverkeeper's June 8, 2003 comments on the Programmatic Workplan for the Portland Harbor RI/FS. We have prepared the following responses for your use.

General Comments

1. **Comment:** *Generally, the document is better written than the previously submitted workplan.*

**Response:** Comment noted and appreciated.

2. **Comment:** *The critical objective listed in the Introduction (Page 1) and throughout the document is "to characterize the Site sufficiently to allow EPA to define site boundaries and select a remedy protective of human health and ecological receptors." However, nowhere in this document can I find the process by which that will be done. How and when will the ISA be evaluated in terms of the larger project area, what decision points are planned for addressing boundary changes, how does the ISA differ from other parts of the Harbor within the Superfund site, how significant is that and what impact might that have on using the ISA as the basis for decision making?*

**Response:** The term "Portland Harbor" can be confusing because it refers to the federal navigation channel which extends from River Mile (RM) 0 (the confluence of the Columbia and Willamette Rivers) to RM 11.6 (approximately the Broadway Bridge). EPA named the federal Superfund site the "Portland Harbor Superfund Site;" however, the Superfund site boundaries have not been determined and are not the same as the federal navigation channel. The actual boundaries of the site will not be determined until EPA prepares the Record of Decision (ROD) following the remedial investigation and feasibility study (RI/FS).

The Administrative Order on Consent (AOC) and associated Statement of Work (SOW) for the RI/FS require the Lower Willamette Group (LWG) to prepare and submit an RI/FS Work Plan for an Initial Study Area (ISA). The ISA is a 5.7-mile stretch of the Willamette River from approximately the southern tip of Sauvie Island at RM 3.5 to the southern tip of Swan Island at RM 9.2 and adjacent areas logically associated with an evaluation of in-water sediment contaminants in this part of the river. As defined by the interagency Memorandum of Understanding (MOU) the Oregon Department of Environmental Quality (DEQ) will conduct or oversee the upland investigations. The ISA is the



geographic site assessment area for in-water investigation based on EPA's assessment of the prevalence of industrial activity, ongoing upland cleanup sites and previous studies indicating the presence of contamination.

As EPA and the DEQ have agreed, sample density will initially be greater in the ISA than outside of the ISA. During Round 2A, samples will be collected about 1.5 miles below the ISA (including in Multnomah Channel) and 2/3 mile upriver of the ISA to evaluate potential upstream sources. Once site-specific, risk-based screening levels and background conditions have been identified during the RI/FS process, they will be applied to the available sediment data. If the data show a contiguous chemical footprint of sediments at concentrations posing unacceptable risks extending downriver from the area of the ISA included in Round 2A sampling, then additional sampling will likely be conducted to determine the extent of this downriver contamination. Similarly, if such sediments are found to enter the ISA from upriver, then additional upriver sampling may be necessary.

If upstream and downstream sampling results and the associated risk assessment suggest the boundaries should be expanded, EPA will make that determination. It is important to note that such an expansion would likely involve a different set of potentially responsible parties.

3. **Comment:** *It is unclear in many portions of the document when the discussion is focused on the ISA and when it includes the entire Portland Harbor Superfund area.*

**Response:** The extent of the Portland Harbor Superfund Site has not yet been defined and will be determined by EPA in the Record of Decision. Definitions for "ISA," "Site," and "Portland Harbor" are provided in Section 1 of the Programmatic Work Plan. See response to general comment #2.

4. **Comment:** *Communication between States, Local governments, Tribes and Natural Resource Trustees is listed as a key concept for the RI/FS however I do not see a communication plan in the report.*

**Response:** The LWG agrees that communication between state, local and tribal governments is important to the Superfund process. A specific communication plan for intergovernmental communication is not required in the Programmatic Work Plan. However, communication objectives and plans are contained in several other documents pertaining to the site. The Programmatic Work Plan describes how the LWG will conduct the Remedial Investigation and Feasibility Study under the AOC and SOW signed in September 2001. The SOW contains information regarding communication among the PRPs and the agencies overseeing the RI/FS. EPA, DEQ, six tribal governments and other natural resources trustees signed a Memorandum of Understanding on February 8, 2001 outlining their joint and individual responsibilities at the site and sets up communication guidelines. This government team meets regularly as described in their MOU. In addition, members of the government team and the LWG meet regularly to discuss project issues. EPA and DEQ prepared a Community Involvement Plan for the site in February 2002. All of these documents describe the communication process among the agencies, trustees, PRPs and the public. Copies of these documents are available to the public from EPA or by visiting <http://www.epa.gov/region10/>.

5. **Comment:** *Evaluation of assumptions and uncertainties is listed as a key concept in the RI/FS however; there do not appear to be delineated decision points to address these issues.*

**Response:** The LWG has proposed to use EPA's seven-step Data Quality Objective (DQO) process to evaluate the assumptions and uncertainties at the site. The process is described in the introduction to Section 7 of the Programmatic Work Plan. The results of what has been completed so far of the DQO process are provided in Tables 7-2 through 7-11 and 8-1. The DQO process will be repeated following the evaluation of each subsequent round of data and provided in subsequent work plan

addenda. Additionally, the ecological and human health baseline risk assessments will specifically address uncertainties as required by EPA guidance (EPA 1989).

6. **Comment:** *Issues were raised as comments to the prior workplan on the process of evaluating historical data and inclusion or exclusion of nondetects with high detection limits. While a discussion of current data is provided, I did not see the evaluation of historical data discussed in the report. Has this been revised to be consistent with the current data analysis discussion?*

**Response:** The quality and usability of historical data are discussed in Sections 4.1 and 4.6, and Appendix G of the Programmatic Work Plan. Those sections describe how historical data with high detection limits may be included in the project database because the quality of the data was acceptable. However, if data with high detection limits are excluded in the risk assessment report, it will indicate which data were excluded and the rationale for not using the data.

7. **Comment:** *The terms iterative and tiered are used interchangeably but mean two different things. These processes should be clarified within the document.*

**Response:** As used in the work plan, the term "tiered" refers to an iterative process that is increasingly focused based on the results of the previous evaluation(s). See the second paragraph of Section 6.3.5 on page 100 for an explanation of the term relative to the risk assessment process.

8. **Comment:** *The guiding criteria appear to be EPA rather than DEQ. How will this impact the uplands clean-up which will be required to adhere to DEQ's more stringent clean-up criteria and risk assessment processes?*

**Response:** In accordance with the MOU, the uplands cleanup is under the authority and jurisdiction of DEQ. DEQ will select remedial actions at upland sites in compliance with Oregon criteria. The Portland Harbor Superfund Site is under the authority and jurisdiction of EPA. EPA will designate the guiding criteria for the in-water site.

9. **Comment:** *EPA allows for a risk range of  $10E-4$  to  $10E-6$ . ODEQ's regulatory standard for carcinogens is  $10E-6$ . The document merely states the criteria, but does not discuss the guiding criteria for this site.*

**Response:** The risk assessment will compare the estimated human health risks with the EPA and DEQ standards for acceptable levels of risk. The approved Quality Assurance Project Plan (QAPP) for the RIFS includes analytical goals that are sufficient to assess risk at the lower of the levels ( $10E-6$  or 1 in 1,000,000). Therefore, data from the analyses should be adequate to assess risk at the lowest applicable levels, regardless of which levels are adopted by EPA for assessing risk at the site. As noted in the response to general comment #8, EPA is the lead agency at the site and will make the final decision on guidance and cleanup, with significant input from the State.

#### Specific Comments

1. **Comment:** *Page 1, paragraph 2. A critical objective is determined to be the characterization of the Site sufficiently to allow EPA to define site boundaries.....how the ISA information will be used to accomplish this does not appear to be discussed in this document. See general comment #2.*

**Response:** See response to general comment #2.

2. **Comment:** *Page 14, last paragraph. As all of the sampling seems to be focused on the ISA, how will the primary objective of this document as listed in #1 be accomplished?*

**Response:** See response to general comment #2. Sampling within the ISA provides the initial focus of the investigation. However, as at any other site, sampling will be conducted to determine the nature (what type and level of contamination) and the extent (where the contamination is located). Therefore sampling may extend beyond the ISA. Of the proposed sampling approach in the Round 2A Field Sampling Plan, 20 of the 95 sediment sampling locations (i.e., 21 percent) are outside of the ISA. The purpose of these stations is to obtain information on sediment-bound chemicals entering and leaving the ISA and thus provide data needed to accomplish the objective of characterizing the site.

3. **Comment:** *Page 34. In the discussion of River Dynamics, it appears that the ISA is predominantly in "dynamic equilibrium". What significance does this have in using the ISA as the primary area of study for the entire Portland Harbor site and how does it affect the applicability of findings in this area to the entire Superfund site?*

**Response:** Again, the actual extent of the Portland Harbor Superfund site has not yet been determined. The classification of much of the site as being in "dynamic equilibrium" does not significantly affect use of the ISA as the initial primary area of study. The ISA has been identified as the area where the majority of the sediment samples will be taken during the initial phase of sediment sampling. The reason for identifying this "initial study area" is to focus data gathering *first* on the areas where sources have historically been the most significant so that the agencies and the LWG understand whether and to what extent unacceptable risks may occur in the system regardless of its physical characteristics. For this reason the Round 2A sampling is focusing on those areas with the highest concentration of possible historic sources. Note that much of the sampling will occur in nearshore areas where the majority of receptors and contaminants occur. The physical characteristics of nearshore areas are quite variable, including depositional, erosional and equilibrium areas. See response to general comment #2.

4. **Comment:** *Page 43/44. These paragraphs describe DEQ's role in implementing, monitoring and enforcing discharge limits to the River. To what extent will DEQ's current backlog of issuing and monitoring permits and other water quality related issues impact this process and proposed remediation? How is this being resolved?*

**Response:** Ongoing sources that are associated with unacceptable risks must be adequately controlled before effective cleanup in the river can be completed. Delays in achieving and documenting source control may impact the cleanup schedule. The LWG does not have specific information on how DEQ's permit backlog is affecting the process or how it will be resolved. The DEQ and EPA are currently working together to develop a source control guidance document for upland sites which will be used by DEQ to assess and control impacted soil, surface water, and groundwater that may adversely impact river sediments. The source control document will address the interplay of storm water permits and source control objectives.

5. **Comment:** *Page 83. "Complete and minor". It is stated that this pathway will not be quantitatively addressed unless sufficient data is available. Isn't the lack of data a "data gap" and to be addressed in the rounds of sampling?*

**Response:** "Minor" pathways will not typically change the "answer" (i.e. they will not influence the overall risk estimate and cleanup solution). Many of the "minor" pathways cannot be quantitatively addressed (i.e., no risk value can be calculated) due to lack of data in the scientific community at large. Even with a great deal of research, the ultimate risk "answer" will not change since the pathway

is so minor relative to other pathways that will be fully evaluated. The relevance of each minor pathway will be discussed with EPA and EPA's partners to clearly understand and develop the most scientifically sound approach to handling each one.

6. **Comment:** *Page 84. Second and third paragraphs. Porewater is considered a complete and uncertain pathway for infaunal and benthic invertebrates (paragraph 2) and a complete and major pathway for mollusks (paragraph 3). How does the information on porewater differ to the extent that these two different determinations have been made?*

**Response:** This is a mistake in the text of the plan. Please see Appendix C, Figure 2-6 of the plan for the correct approach. Direct contact/uptake to porewater for infaunal (those living in the sediment, including mollusks) invertebrates is considered complete and the significance is uncertain at this time (until further information is gathered at the site). Direct contact/uptake to porewater for both epifaunal (those living above the sediment) and macrofauna (in this case we refer to crayfish) invertebrates is considered incomplete at this time since they are not living within the porewater. As we gather information about the sediment-porewater system and the chemicals and transport mechanisms within the system, our understanding of these pathways and the significance to potential risk will improve and we will communicate this information to the EPA, its partners and public.

7. **Comment:** *Why was a diver not included as a receptor for surface water? Which scenario would be considered protective for this receptor as diving activities to repair ships and by public safety officials does occur in the river. Additionally, a diver would be protective of other recreational river uses such as boating, sailing and jet skiing where there is more significant contact with surface water than a shore side dock worker. All receptors appear to address current conditions, what about future receptors? Input at community meetings and the City of Portland's general direction to renovate the waterfront area indicate a general desire on the part of the community to increased uses of the River. Where and how are these types of future receptors being addressed?*

**Response:** Not every known receptor will be specifically evaluated in the risk assessment (e.g., divers). The selected receptors are anticipated to be representative of a broader range of receptors. One of the selected receptors is a recreational beach user, which includes direct contact with surface water during swimming. The surface water contact that would occur during swimming represents a more significant exposure than periodic diving activities (during which time the diver is likely wearing a protective suit and other equipment that would limit exposure).

The selected receptors address both current and potential future uses. Future plans for waterfront redevelopment were considered in selecting the receptors (see Section 4.5 for a discussion of proposals for future human uses). Although redevelopment may occur, it is not anticipated that the identified receptors would change. To be protective of future uses, conservative exposure assumptions will be used in the risk assessment that address potential increased use of Portland Harbor and are not representative of current exposures (e.g., 65 days of swimming in Portland Harbor per year is a high exposure frequency considering current conditions of the harbor).

8. **Comment:** *Page 88. Third paragraph. It is stated here that the baseline risk assessment will focus on the ISA. At what point and how will information relative to the ISA be used to fully characterize the Superfund site? Will the HHRA be reevaluated once the boundaries have been redefined?*

**Response:** The human health and ecological baseline risk assessments will encompass all areas of the Superfund Site, when those boundaries are ultimately determined, and will not necessarily be restricted to the ISA. As discussed in the introduction of Appendix D, the approach to be used for the baseline HHRA will be applicable if the site boundaries change but the study is currently focused on the ISA. The data collected for the ISA to support the baseline HHRA are relevant for areas outside

the Superfund Site. The fish species selected as target species for the baseline HHRA have large enough home ranges to encompass areas outside of the ISA. Therefore, the fish tissue data will still be relevant for evaluations of human health risks if the site boundaries expand. While the beach sediment data are specific to the ISA, the data within the ISA are anticipated to represent the "worst-case" conditions for beaches in the lower Willamette.

9. **Comment:** *Page 89. Current and Future Transients. Evaluation of fish consumption by this receptor appears to have been written off, at this early stage of the RI/FS why is this not considered a data gap?*

**Response:** Fish consumption by transients will be considered in the baseline HHRA. As indicated in the conceptual site model, potential fish consumption by transients will be addressed under the fish consumer scenarios. Information needed to adequately quantify risks to transients from fish consumption (e.g., fish consumption rates, types of fish consumed) cannot be easily obtained. However, the risk assessment will evaluate long-term exposures for other fish consumers such as Native Americans and other high-end consumption groups (e.g., immigrants from Asia and Eastern Europe). These risk assessments should be protective of any fish consumption by transients.

10. **Comment:** *Page 92/93. Risk Based Approach to ROD. Information from the human health and ecological risk assessment, which appear to be driven by information limited to the ISA, will provide the basis for the FS. It is not clear from this discussion at what point the entire Superfund site will be included in this process. As the ISA is located in an area of the River considered to be in dynamic equilibrium, how will this be addressed when areas of potentially unacceptable concentrations of sediment are identified for remediation?*

**Response:** The human health and ecological baseline risk assessments will encompass all areas of the Superfund Site, when those boundaries are ultimately determined, and will not necessarily be restricted to the ISA. The LWG will consider site-specific river conditions at each location where remediation is needed during the development of cleanup options in the feasibility study.

11. **Comment:** *Pages 95/96 Pre-AOC Tasks and Round 1 Work. It is unclear where this work was done -was it limited to the ISA?*

**Response:** Both pre-AOC and Round 1 work extended beyond the ISA. Most of the pre-AOC work is summarized in Section 2 of the plan. Many of these studies extended upstream to Ross Island or Willamette Falls and downstream to the Columbia River. The Round 1 sampling program is documented in the Round 1 Field Sampling Report (SEA et al. 2003).

12. **Comment:** *Page 98 Round 2. Where will this be done? Limited to ISA?*

**Response:** About 80 percent of the sediment samples proposed for Round 2A will be conducted within the ISA. The remainder will be collected approximately 1.5 miles downstream of the ISA and within Multnomah Channel and 2/3 mile upstream of the ISA. Round 2B sampling may extend even farther upstream or downstream of the ISA depending on the results of Round 2A investigations.

13. **Comment:** *Page 104 Section 6.3.8. Where and how will the Site boundaries be redefined? It appears that the discussions continue to focus on the ISA.*

**Response:** Site boundaries will be defined in EPA's Record of Decision. See response to general comment #2.

14. **Comment:** *Page 107 item #4. Is this limited to the ISA or does this refer to the full site characterization?*

**Response:** This step in the Data Quality Objective process requires that the available data be evaluated to determine the project boundaries in terms of space and time. The RI relies on an iterative sampling process and during SOW negotiations, both EPA and the LWG agreed to initially focus efforts in the ISA while sampling at a reduced level of effort outside of the ISA. After Round 2A and subsequent sampling rounds, all data collected will be evaluated to determine the project boundaries that are appropriate to achieve the RI/FS objectives. See response to general comment #2.

15. **Comment:** *Page 112. Bullet #5. How will the river dynamics be factored into this, or will this sampling not be limited to the ISA?*

**Response:** The bullets on page 112 apply to all surface sediment sampling locations, both within the ISA and outside of the ISA. Pre-AOC and Round 1 studies of the river bottom using sonar have delineated areas of short-term erosion and deposition. The majority of Round 2A surface sediment samples will be placed in areas where sediments appear to be depositing or where there was no change in the depth to the sediment surface. The LWG has proposed to conduct computer modeling of the lower Willamette River that will predict where erosion and deposition would occur in the river bottom under various river flow (including flood) conditions. Some Round 2B subsurface sediment sampling will be conducted in those areas of the river where the computer model suggests that long-term or flood-related erosion may occur to evaluate potential future exposure of presently buried sediment.

16. **Comment:** *Page 117. The discussion on this page is unclear. Is this limited to the ISA? If so then how will this be used to fully characterize the site beyond the ISA?*

**Response:** The evaluation of potential sources of contaminated groundwater and the assessment of risks from the sources will focus initially on the ISA. This approach is consistent with the sampling described for sediment, surface water and biota. Assessment of groundwater sources outside the ISA could result if unacceptable risks are identified in river sediments outside the ISA in areas where contaminated groundwater sources are known or suspected in upland areas.

17. **Comment:** *Page 125. #4 Can co-location be demonstrated and to what extent?*

**Response:** An electronic Global Positioning System (GPS) was used during sample collection to precisely identify and record coordinates for sample collection locations. The recorded GPS coordinates were then used to guide the sampling crews to re-occupy the previous sampling location and collect the additional samples. The level of accuracy associated with this type of sampling is less than  $\pm 50$  ft which is the level of accuracy required by regional guidance (e.g., EPA Puget Sound Estuary Program guidelines; EPA 1986). Note that sculpin and crayfish stations were defined as areas along the shoreline that extended up to 100 feet in length along the river. The co-located sediment samples were similarly collected by taking multiple sediment samples along the same shoreline area and mixing the sediment thoroughly. Round 1A sample collection details are provided in the Round 1 Field Sampling Report (SEA et al. 2003).

18. **Comment:** *Page 133. Early Actions. How will the impacts of early actions be evaluated on areas outside of the ISA and vice versa?*

**Response:** Early action evaluations will take into account risk reduction provided by the action, and to that end the risk reduction considerations could occur outside the ISA. The risk reduction will be evaluated in the immediate area of the action for those receptors with a small home range that is represented primarily by the action area itself. For receptors with a larger home range, the evaluation

could extend outside the ISA, depending on where the action occurs and how large the receptor's home range is. In those situations where we are evaluating risk reduction to receptors with a larger home range than the action area, we will estimate area-wide averages for the receptor's home range and use that value in residual risk or risk reduction estimates.

#### Appendix C Ecological Risk Assessment Approach

**19. Comment:** *Page 1 Paragraph 2. Where and how will the boundaries of the site be defined?*

**Response:** The boundaries of the site will depend on chemical concentrations in a contiguous pattern at levels that cause unacceptable risk. When the chemical concentrations decrease to the point of not causing unacceptable risk that will be the boundary of the site. Site boundaries will be determined in the Record of Decision using both the ecological and human health baseline risk assessments. Boundaries will represent areas of unacceptable risks to ecological receptors or human health. See response to general comment #2.

**20. Comment:** *Page 3. The process describes the consideration of background concentrations of constituents after the site risk characterization has been completed. As background concentrations can drive a risk assessment isn't there a danger that constituents that are site related and can be remediated will be overshadowed and deemed "insignificant" unless constituents within background concentrations are removed from the overall site characterization?*

**Response:** Yes. That is why the LWG will wait until the risk characterization (this is after risk estimates and calculations are complete) to discuss how background concentrations may influence our decisions. We will clearly indicate what are risks attributable to the site as opposed to risks attributable to background. This information will be valuable in making risk management decisions.

**21. Comment:** *Page 4. Can co-location be demonstrated? How will co-located sampling data be used? What impact do the river dynamics have on this?*

**Response:** See response to specific comment #17. Both tissue and sediment were collected from the same location. This information will be used to evaluate the relationship between sediment chemical concentrations and tissue concentrations in the same locations. The information will also be used in wildlife food web models since the co-located samples were located in foraging habitats for various bird and mammalian species. At this point, the LWG is still evaluating the impact of river dynamics on sediment stability. However, based on historic sediment analytical results, sediment concentrations have not changed much in the past few years. This information, in combination with recent bathymetry results, suggests that the sediments have not moved very much. The LWG will keep the CAG informed, and adjust our assumptions and approaches if necessary as we gather more information.

**22. Page 5/6 Section 1.5. How and where will ISA be redefined?**

**Response:** See response to general comment #2.

**23. Comment:** *Page 14. Individual Level measures. Will all species listed in Table 2-8 be evaluated on an individual level?*

**Response:** In ecological risk assessments, we cannot evaluate every organism in the environment. Therefore we attempt to select the most sensitive or most representative organism to be the "receptor" for the entire group. The selection criteria are listed in Section 2.5 of Appendix C of the plan. For example, although the steelhead is listed in Table 2-8, we are using the juvenile Chinook salmon as



our receptor since it is a more sensitive life-stage and spends more time associated with the sediments.

24. **Comment:** *Page 16 and Section 2.3. From the discussions on these pages, it appears that the ISA may have some significant differences from the rest of the Superfund area, how will this impact the ability to use the ISA in order to understand areas within the Site but outside of the ISA?*

**Response:** See response to general comment #2. Until the full extent of contamination is determined, we do not know the actual boundaries of the Superfund site. The ISA is the area that will be most intensively sampled during the initial round of sediment sampling. As noted in responses to earlier comments, 20 percent of the samples proposed for collection will come from areas outside of the ISA. If risks outside of the ISA are not observed based on existing and Round 2A data, then additional sampling beyond that already proposed will not be necessary.

25. **Comment:** *Page 56. Complete and minor. See Specific Comment #5.*

**Response:** See response to specific comment #5.

#### Appendix D Human Health Risk Assessment Approach

26. **Comment:** *Pages 1 and 2. HHRA Objectives and Approach. The subject area for these discussions appears to be the entire Portland Harbor Superfund area. However previous discussions in the main body of the text indicate that the HHRA will be conducted only on the ISA. This needs to be clarified and the process by which the boundaries will be reevaluated and addressed should be clearly delineated.*

**Response:** The remedial investigation will focus initially on the ISA, as required by the AOC. As stated in the response to specific comment #8, the baseline HHRA will focus on the ISA, but the approach presented in Appendix D will be applicable to the entire Superfund Site should the boundaries change.

27. **Comment:** *Page 10 Bullets. While all receptors need not be fully addressed, why is a diver not included? Which receptor listed will be protective of the diver and recreational water users such as sailor or jet skier? See specific comment #7.*

**Response:** As stated in the response to specific comment #7, the selected receptors are anticipated to be protective of other receptors that will not be evaluated in the risk assessment (e.g., divers). The recreational beach user scenario, which includes evaluation of direct contact with surface water during swimming and other beach activities, should be protective of other recreational water users and divers, who have less contact with surface water.

28. **Comment:** *Page 13. Potentially Complete and Insignificant Pathways. Low concentrations of chemicals are determined within the chemical screening, not in the pathway analysis.*

**Response:** According to EPA guidelines for conducting human health risk assessments (EPA 1989), pathways for quantitative evaluation should be selected from all complete exposure pathways at a site. Pathways may be excluded from further evaluation if "the potential magnitude of exposure from a pathway is low". The magnitude of exposure is determined both by the extent of contact with a medium and the chemical concentration in the medium.

29. **Comment:** *Page 15. As homelessness becomes an increasing problem in our area, children should be included in the transient scenario.*

**Response:** While homelessness may be an increasing problem in the area, the transient scenario does not include all homeless individuals. The transient scenario only addresses those individuals who occupy riverbank areas within the site. The transient scenario is based on actual observations of homeless individuals during numerous surveys along the river. Children have not been observed as transients within the site during these surveys or during any other reconnaissance activity on the river. However, the HHRA will evaluate risks to children as recreational beach users and fish consumers.

30. **Comment:** *Page 18 Section 3.3.4.1. Dermal contact with surface water is considered negligible and insignificant for the selected receptors, therefore they are not protective for those receptors that do have significant contact with surface water such as boaters, divers, sailors and jet skiers. These receptors should be considered to address potential impacts from surface water.*

**Response:** Dermal contact with surface water is considered a potentially complete pathway with significance unknown for transients and recreational beach users. As defined in Section 3.2.1, potentially complete pathways with significance unknown will be quantitatively evaluated in the baseline HHRA. The exposure parameters that will be used to evaluate these pathways are presented in Tables 8, 10, and 12 for transients, adult recreational beach users and child recreational beach users, respectively.

31. **Comment:** *Page 35. Section 4.4 Non-cancer health impacts for dioxins and furans are addressed using a Margin of Exposure (MOE) methodology. Will non-cancer effects be addressed in the RA? This section implies that only carcinogenic effects will be quantitatively evaluated.*

**Response:** Current EPA guidance does not provide a methodology to evaluate non-cancer effects of dioxins and furans. As a result, only carcinogenic effects will be quantitatively evaluated. If the draft EPA guidance for assessment of dioxins and furans is finalized prior to the baseline risk assessment, the method used in the baseline HHRA to evaluate dioxins and furans will be reevaluated based on the final EPA guidance.

32. **Comment:** *Page 38. EPA and DEQ regulatory standards. Will EPA's or DEQ's regulatory standard guide the clean-up?*

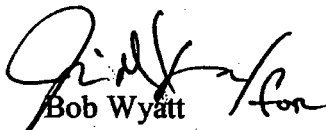
**Response:** As stated in the response to general comment #9, the risk estimates will be compared with both EPA and DEQ standards for acceptable levels for risk. However, while the guiding criteria for the site are from EPA, as the site is under the authority and jurisdiction of EPA, the cleanup will require state acceptance.


33. **Comment:** *Page 39. Will a separate workplan be submitted in the event that a probabilistic approach is incorporated into the RI/FS?*

**Response:** A probabilistic approach may be used to evaluate the uncertainty associated with the risk estimates but not to conduct the overall risk assessment itself. A separate work plan to evaluate the uncertainty associated with the baseline HHRA is not necessary.

We hope that you find the above information helpful in your continuing review of this project.

Sincerely,

  
Bob Wyatt  
Co-Chair

  
Jim McKenna  
Co-Chair

cc: LWG Executive Committee  
LWG Legal Committee